Abstract

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Title of Thesis	Evaluation of the prediction equations for resting energy expenditure in critically ill patients

The inaccurate prediction of nutritional requirements of critically ill patients can cause overfeeding or underfeeding. It may lead to deceleration of repair processes, failure of organ function to fatal consequences. Indirect calorimetry is the most accurate method for assessment of energy requirements, but it not available in every intensive care unit. Thus, the purpose of this study was to evaluate accuracy of the prediction equations in critically ill patients and compare them with REE measured by indirect calorimetry.

The study took place in the intensive care unit at FN HK during 8 months. Twenty patients were examined (mean age 35 years ± 16 years, BMI 27,8 kg/m^2 ± 8,4 kg/m^2). Measure of resting energy expenditure by indirect calorimetry were compare with REE calculate by using different nineteen prediction equations.

Resting energy expenditure was on average 2166 kcal/d ± 552 kcal/d. Only these equations - Ireton-Liepa (2239 kcal/d ± 341 kcal/d; P = 0,6152; 103 % MEE), Ireton-Jones 1997 (2266 kcal/d ± 298 kcal/d; P = 0,4765; 104 % MEE) and Fusco (1943 kcal/d ± 322 kcal/d; P = 0,1282; 89 % MEE) - achieve the significant accuracy of prediction. Penn-State, Swinamer a Frankenfield equations were not directly tested because for difficulty obtaining the necessary values. But they were evaluated from the results of foreign studies.

If is it not possible to use indirect calorimetry in critically ill patients may be to predicted the energy requirements of individuals via use of Ireton-Liepova equation separately for spontaneously breathing patients and for patients connected to mechanical ventilator. To be considered reliable enough, Penn State and Swinamer equations for patients with BMI < 30 kg/m^2. Is not suitable for polytraumatic patients to use of Harris-Benedict equation.

Key words: critically ill patients, resting energy expenditure, indirect calorimetry, prediction equations, metabolism